

PROJECT NUMBER: 1307  
PROJECT TITLE: Reconstituted Tobacco Development  
PROJECT LEADER: R. G. Uhl  
PERIOD COVERED: November, 1989

I. ART STEM UTILIZATION

- A. Objective: Develop the capability to fully utilize spent absorber stems from the ART process.
- B. Results: Blended cigarettes containing reduced levels of RCB made with 11% monopotassium citrate (MPC) stems were screened by the Richmond Panel. The model with test sheet replacing 50% of the RCB (simulates 5½% MPC stem in RCB) gave differences (heavy and mouthcoating) vs control; the bitter/green aftertaste associated with higher ART stem levels was not detected. The model replacing 25% of the RCB (simulates ~3% MPC stem in RCB) gave only minor differences (not typical ART stem notes); picking data showed 28% recon in the test cigarette vs 20% in the control, which would explain the lower ( $\Delta=1$  mg) tar delivery in the test cigarette and would account for the subjective differences noted. The panel recommended making a legitimate RCB test sheet with 3% MPC stems.

Two tests directed at qualifying a low usage level of monopotassium citrate (MPC) stems in RCB were already in progress at the BL Plant. These were a test sheet incorporating 2% MPC stems and a second test sheet made with 2% MPC stems + 2% citric acid (CA) stems. Test RCB containing 3% MPC stems will be made if subjective results are acceptable on the 2% MPC sheet.

Blended cigarettes containing RCB made with 11%, 16% and 22% citric acid stems have been made and submitted for analyticals. Subjective evaluation will concentrate on the RCB made with 11% CA stems based on the results of initial screening. If this sheet material is unacceptable, a lower level of CA stems in RCB will be tested (4-8%, depending on detectability of 11% CA stems).

Direct inclusion models containing 3% and 5% citric acid stems that were made into ES and IS at Louisville, as well as CA stems ammonia cased and Hauni tunnel treated in Semiworks, have cigarette analyticals pending. The preliminary screening of the ammonia treated material indicates an improvement over normal CA stems, but too much "dark" character (reacted ammonia/sugar flavors) when incorporated at 5% in a cigarette. The coarse CRS cut width now in use at Bermuda Hundred could preclude the direct inclusion option. The above IS and ammonia treated stems were also made into pilot RL to determine if these pretreatments increase utilization potential in sheet.

Park 500 trials have been requested to evaluate low level incorporation of citric acid stems in RL. Inclusion in RLTC is expected to have the highest probability of acceptance, and may be the best means of utilizing CA stems in brands not containing RCB.

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- C. **Plans:** Produce plant test sheets to determine the maximum acceptable level of MPC stems and to qualify an initial usage level of CA stems. Produce pilot RL sheets to evaluate the subjective impact of CA stems used for double ART extractions.

## II. LIQUID FLAVORS

- A. **Objective:** Develop liquid flavor replacements for dry flavors in reconstituted sheet products.
- B. **Results:** Takasago liquid flavor, compounded at the Flavor Center, was used to produce RLB test sheet (without dry flavors) at Park 500. The latest Chart liquid flavor sample met residual alcohol specifications, but had insufficient degree of roasting and was rejected from an analytical and subjective standpoint.
- C. **Plans:** Evaluate Park 500 RLB with liquid flavors. Produce pilot RL-150B to evaluate new Chart flavor samples when available.

## III. ASTA

- A. **Objective:** Develop subjectively and physically acceptable reconstituted sheets for international application using cast sheet technology and proprietary binder systems.
- B. **Results:** Analytical data on handmade 100% cigarettes comparing ASTA-II (pectin binder) handsheets to ASTA-I (DAP binder) handsheets showed that the pectin sheets gave a 40% reduction in static burn time and puff count. Tar, nicotine and TPM were reduced, but were higher on a per puff basis. Handsheets were made to define the interactive effects of tobacco particle size and pectin addition on ASTA-II sheet physical properties.
- TSA forwarded the requested samples from the cast sheet facility in Cadiz, Spain. Two sets of dust blending silo discharge show consistent tobacco particle size (95% <120 mesh); chemical analyses are in progress. Finished sheet samples taken across a two day period during the Cadiz visit indicate product consistency via both TSA and PM-USA laboratory data. Similar samples from a subsequent five day operating period show uniformity by TSA analyses; these samples are also being analyzed at R&D.
- C. **Plans:** Complete the initial evaluation of ASTA-II (pectin binder) handsheets. Complete the analysis of TSA samples to determine the analytical stability of the Cadiz process.

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